ZAVADSKIY, V.B.

Best specialists of the State Institute for the Design, Planning and Study of Highways. Avt.dor. 28 no.10:18,20 O '65. (MIRA 18:11)

1. Glavnyy inzhener Gosudarstvennogo proyektnogo instituta po izyskaniyam i proyektirovaniyu avtomobil'nykh dorog.

L 36540-66 EWT(1) IJP(c) WW

ACC NR: AP6016829 (N) SOURCE CODE: UR/0046/66/012/002/0192/0205

AUTHOR: Zavadskiy, V. Yu.

ORG: Acoustics Institute, AN SSSR, Moscow (Akusticheskiy institut AN SSSR)

TITLE: Concerning certain problems of diffraction occurring in liquid and elastic wedges in contact

SOURCE: Akusticheskiy zhurnal, v.12, no. 2, 1966, 192-205

TOPIC TAGS: acoustic diffraction, wedge body, acoustic property

ABSTRACT: The author considers the two-dimensional problem of diffraction of a plane harmonic wave in a liquid wedge of arbitrary aperture angle, one of whose faces is in contact with another liquid wedge having an aperture angle which is a multiple of $\pi/2$. Both wedges have a common edge and are characterized by different acoustic parameters. The acoustic pressure in each wedge is represented by a Sommerfeld integral and the diffraction problem reduces to a determination of the Sommerfeld transformats. A system of functional equations is investigated for the latter. A method is proposed for solving the system, based on a certain generalization of the Laplace transformation. The same method is used to obtain the solutions of the functional equations corresponding to diffraction in a wedge having both faces in contact with wedges whose aperture angles are multiples of $\pi/2$, in a liquid wedge lying on an elastic half-space, and also when four rectangular wedges make contact with their faces and have a common edge. [Author's abstract]. The author thanks G. D. Malyuzhinets for useful advice and consultation on questions considered in the work. Orig. art. has: 4 figures and 52 formulas.

Card 1/2

UDC: 534.26

L 36540-66
ACC NR: AP6016829

SUB CODE: 20/ SUBM DATE: 16Nov64/ ORIG REF: 007/ OTH REF: 003

Card 2/2

ZAVADSKIY, Vyacheslav Svyatoslavovich, inzhener; IVANOV, O.M., kandidat tekhnicheskikh nauk, nauchnyy redaktor; BEGAK, B.A., redaktor izdatel'stva; SMOL'YAKOVA, M.V., tekhnicheskiy redaktor

[Autoclave gas concretes; their properties, manufacture and use] Avtoklavnye gazobetony; ikh svoistva, proizvodstvo i primenenie. Moskva, Gos.izd-vo lit-ry po stroit. i arkhit., 1957. 154 p. (Lightweight concrete) (MIRA 10:9)

ZAVADSKIY, Vyacheslav Svyatoslavovich; IVANOV, O.M., kandidat tekhnicheskikh nauk, nauchnyy redaktor; BEGAK, B.A., redaktor izdatel'stva; SMOL'YAKOVA, M.V., tekhnicheskiy redaktor

[Air-entrained concrete; properties, manufacture and use] Avtoklavnye gazobetony; ikh svoistva, proizvodstvo i primenenie. Moskva, Gos.izd-vo lit-ry po stroit. i arkhit., 1957. 154 p. (MLRA 10:9)
(Air-entrained concrete)

ZAVADSKIY, V.V.

Methods for improving the economic indices of the heat supply to the Omsk Petroleum refinery. Neftepер. i neftokhim. no.2: 12-14 '64. (MIRA 17:8)

1. Omskiy filial Gosudarstvennogo Instituta po proyektirovaniyu neftepererabatyavayushchikh zavodov.

ZAVADSKIY, V.V., inzh.

Methane explosion in the shaft of an inactive mine. Bezop.truda v prom. 4 no.12:8 D '60. (MIRA 14:1)

1. Trest Artemshakhtostroy.
(Stalino Province--Mine explosions)

MAZUROV, D. Ya.; ZAVADSKIY, Ya. M., Engs.

Cement Kilns

Increasing the output of automatic shaft furnaces. TSement 19, No. 1, 1953.

9. Monthly List of Russian Accessions, Library of Congress, June 1953. Unclassified.

ZAVADSKIY, Ye., inzh.

Tool for making curbstones. Avt.dor. 24 no.2:29 F '61. (MIRA 14:2)
(Vibrators) (Curbstones)

ZAVADSKIY, Ye., inzh.

Forms for making precast reinforced concrete railings. Avt. dor. 22 no.8:12-13 Ag '59. (MIRA 12:11)
(Concrete construction--Formwork)

ZAVADSKIY, Ye., inzh.

Sinking piles using reusable derrick bridges mounted on carts.
Avt. dor. 21 no.5:8-9 My '58. (MIRA 11:6)
(Bridges--Construction)

ZAVADSKIY, Ye., inzh.

Using mechanized sowing of grass seed for protecting bank slopes. Avt. dor. 25 no.2:13-15 F '62. (MIRA 15:2)
(Roadside improvement)

ZAVADSKIY, Ye., inzh.

Innovators facilitate the work of road construction workers.
Avt.dor. 25 no.11:24-25 N '62. (MIRA 15:12)
(Road construction—Technological innovations)

ZAVADSKIY, Ye., inzh.

Mechanization of the working of frozen ground. Avt. dor. 24 no.10:14-15 O '61. (MIRA 14:11)

(Frozen ground)

ZAVADSKIY, Yo.

The best machinist working for the Ministry of Construction for the Transportation Industry. Avt. dor. 24 no.8:3-4 Ag '61. (MIRA 14:9)

(Excavation)

ZAVADSKIY, YE. D.

ZAVADSKIY, YE. D. — "Selection and Evaluation of Functional Tests of the Cardiovascular System on the Basis of Medical Observations on Young Wrestlers and Boxers. (Experimental Investigation)." State Central Order of Lenin Inst of Physical Culture imeni I. V. Stalin, Moscow, 1955. (Dissertation For the Degree of Candidate in Medical Sciences).

SO: Knizhnaya letopis', No. 37, 3 September 1955

YEVSTAFEYEV, S.V., inzh.; ZAVADSKIY, Ye.I., inzh.

Mechanization of construction work on the Moscow Circumferential Highway. Mekh.stroi. 19 no.3:4-8 Mr '62. (MIRA 15:3)
(Road machinery) (Moscow region--Road construction)

MARTYNOV, N.V.; ZAVADSKIY, Ye.I.

Mobile greasing station. Avt.dor.18 no.1:23-24 Ja-F '55. (MIRA 8:4)
(Road machinery)

ZAVADSKIY, Ye.I., inzh.

Using the KS-3 pontoons in bridge construction. Avt.dor. 22 no.3:18-19 Mr '59. (MIRA 12:4)
(Pontoons)

ZAVADSKIY, Yevgeniy Iosifovich; MARTYNOV, N.V., red.

[Mechanizing the construction of automobile roads] Mekhanizatsiia stroitel'stva avtomobil'noi dorogi. Moskva, Transport, 1964. 75 p. (MIRA 17:7)

14(2) SOV/100-59-10-6/12

AUTHOR: Zavadskiy, Ye.I., Engineer

TITLE: Sixty-ton Sluice-Gate Crane for Block Assembling

PERIODICAL: Mekhanizatsiya stroitel'stva, 1959, Nr 10, pp 20-23 (USSR)

ABSTRACT: Glavdorstroy has started using sluice-gate cranes which require no gantry and are capable of moving structural elements length- and crosswise. Cranes of this type are produced by the Darnitskiy Plant of Glavdorstroy. The metal structure of the crane consists of a 70-m long frame resting on three supports. The frame has a triangular form, 2800 mm high and 5,600 mm wide. The dismantled crane can be shipped on 8 RR platforms of 20-ton capacity each, or on 30-34 trucks with trailers. The mechanical part of the crane comprises 2 load hoisting mechanisms, 2 mechanisms for crosswise transportation, 1 mechanism for lengthwise transportation of carriages and 1 mechanism for shifting the crane. The hoisting mechanisms are installed on the carriages of crosswise transportation, each being equipped with a pulley block and a 3-ton electric winch. The lengthwise movement of the carriages is brought about by 4 rollers running on the lower girdle of the frame. The shifting mechanism of the crane consists of 2 two-wheel power-driven carriages.

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Sixty-ton Sluice-Gate Crane for Block Assembling

All mechanisms are controlled from the cabin located near the middle support. The assembling of the crane is done with the aid of the truck mounted crane K-51, equipped with a 12-m boom and a gantry with Q = 60 tons. The article gives the technical characteristics of the crane and describes the procedure of putting it up. To ensure perfect safety in the operation of the crane, it is necessary to observe strictly certain rules, which are listed in the article. In a table are shown the various operations necessary to be performed in the course of constructing a bridge section, the time required for each operation and the number of men needed. The experience gained in actual practice with the new sluice-gate cranes has revealed certain drawbacks of the trial models which are briefly enumerated in the article.
There are 3 photos, 1 diagram and 2 tables.

ZAVADSKIY, Ye.I.

Lowering water level in excavating pits for bridge footings. (MIRA 10:10)
Avt.dor. 20 no.9(179):18-19 S '57.
(Bridges--Foundations and piers) (Hydraulic engineering)

ZAVADSKIY, Ye.I., inzhener; ZHIDENKO, G.M., inzhener.

Wash method of pile driving with additional introduction of compressed air. Avt. dor. 19 no.7:29-30 Jl '56. (MLRA 9:10)

(Piling (Civil engineering))

ZAVADSKIY, Ya.I., inzh.

New road machinery used in the building of the Moscow circumferential highway. Avt.dor. 23 no.11:11-14 N'60. (MIRA 13:11)

(Moscow region--Road machinery)

ZAVADSKIY, Ye.I., inzh.

Machine for filling joints. Avt.dor. 24 no.5:19-20 My '61. (MIRA 14:6)

(Road machinery)

MAKAROV, Vladimir Ivanovich; ZAVADSKIY, Ye.I., nauchn. red.;
BERKZOVSKAYA, A.L., ved. red.

[Machinery for the construction of cement-concrete pavements]
Mashiny dlia stroitel'stva tsementnobetonnykh dorozhnykh
pokrytii. Moskva, Vysshaia shkola, 1964. 206 p.
(MIRA 18:3)

ANTONOV, A.N. (Kiyev); ZAVADSKIY, Yu.V. (Kiyev)

Hypersonic gas flow about a thick cone. Prikl. mekh. 1 no.4:92-96 '65. (MIRA 18:6)

1. Kiyevskiy gosudarstvennyy universitet.

ZAVALIY, I.V.; SHIMANSKAYA, Ye.T.; SHIMANSKIY, Yu.I.; Prinimali uchastiye: ANTYUKOVSKAYA L.M., student; KOVALENKO G.F., student; KHOMUTOVA, Z.I., student

Behavior of the density of the solution benzene-propol alcohol near the critical point at the liquid - vapor boundary. Ukr. fiz. zhur. 9 no.5:491-496 My '64. (MIRA 17:9)

1. Kiyevskiy gosudarstvennyy universitet.

ZAVADSKIY, Yu.Ye., aspirant; KORMYSHEV, V.V., inzh.

Calculating short circuit currents in semiconductor rectifier systems of the rolling stock of electric railroads. Vest. TSNII MPS 23 no.6:5-9 '64. (MIRA 17:10)

ZAVADSKIY, Yu.Ye., inzh.; KARELOV, O.Ye., inzh.; Prinimali uchastiye: STEL'MASHENKO, M.B., inzh.; VYSOTSKIY, A.P., inzh.

Protection of silicon rectifier systems of electric rolling stock. Vest. elektroprom. 33 no.9:34-37 S '62. (MIRA 15:10)

(Electric railroads—Current supply)
(Electric current rectifiers)
(Electric protection)

ZAVADSKIY, Z.A.; KOVRIZHNYKH, Yu.T.; FAKIDOV, I.G.

Hall constant in p-Ge as a function of the magnetic field intensity.
Zhur. eksp. i teor. fiz. 40 no.4:1229-1231 Ap '61. (MIRA 14:7)

1. Institut fiziki metallov AN SSSR.
(Hall effect) (Germanium--Magnetic properties)

S/032/61/027/005/006/017
B130/B220

9.4300

AUTHORS: Zavadovskaya, Ye. K. and Treskina, M. N.

TITLE: Conductivity measurement of solid dielectrics in a wide temperature range

PERIODICAL: Zavodskaya laboratoriya, v. 27, no. 5, 1961, 569 - 572

TEXT: A method is described to study the dependence of the conductivity of solid dielectrics on temperature by means of a vacuum measuring cell. The temperature range is 140 to 700°C, the vacuum $10 \cdot 10^{-5}$ mm Hg. Alkali halide crystals were used for these investigations (NaCl and a 10 % molar solid solution of KCl in KBr). In order to eliminate the disturbing effect of oxidation by air at 700°C, the tests were made in inert gas or in vacuum. A measuring cell has been designed by the authors for conductivity measurements in the vacuum (Fig. 1). 1 is the crystal specimen. The upper electrode 2 is isolated by a quartz tube 4 against the guard ring 3. The electrode itself is fitted exactly into a ceramic tube. In the lower electrode 6 and in the guard ring 3 are spirals which are isolated against the metal by quartz covers. The temperature is controlled by two chromel-

Card 1/5

Conductivity measurement of...

alumel thermocouples. The system of the electrodes is supported by a ceramic disk 9 fixed on 4 nickel prongs. The upper two disks are removable. Teflon plugs 10 isolate the feed wires against the brass base and ensure a good vacuum. The conductors of the thermocouples and oven spirals are enclosed in glass isolators of type ИСЦ (ISSh) and melted into the brass base. Based on this design, a vacuum of the order of magnitude $1 \cdot 10^{-5}$ mm Hg was obtained without any discharge currents occurring. The measurements were made with well polished electrodes manufactured by dispersion of platinum in a discharged gas. Because of the increased conductivity at elevated temperatures it is not absolutely necessary to provide a guard ring (R. W. Ure, J. Chem. Phys., 26, 1363 - 1373 (1957); and Ewles and S. C. Zain, Proceedings of the Ray Soc., 1234, 243, 353 - 358 (1958)). The measurements made by the authors indicate that the conductivity increases due to surface currents, if one does not use a guard ring. The surface of the specimen influences the exactness of the measuring results considerably. Higher exactness and smaller variations are obtained for specimens with polished surfaces. If a potential is applied to the electrodes, the current intensity decreases rapidly, thus, it is difficult to determine the initial value of the intensity. For this reason, the authors made use of intensities approximating the residual current. There are

Card 2/5

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S/032/61/027/005/006/017
B130/B220

Conductivity measurement of...

4 figures and 5 references: 2 Soviet-bloc and 3 non-Soviet-bloc. The references to English-language publications read as follows: R. W. Ure, J. Chem. Phys., 26, 1363 - 1373 (1957); Ewles and S. C. Zain, Proceedings of the Ray Soc., 1234, 234, 353 - 358 (1958).

ASSOCIATION: Tomskiy politekhnicheskiy institut im. S. M. Kirova
(Tomsk Polytechnic Institute im. S. M. Kirov)

Card 3/5

ZAVADOVSKIY, Ye. K.

"Dielectrics of High Electric Strength," DAN 82, No. 5, pp 709-712, 1952.

ZAVADOVSKIY, Ya. K.

"Relation Between Rupture Strength and Mobility of Charges in a Dielectric," DAN, 82, No. 4, pp 565-566, 1952.

L 09857-67 JK

ACC NR: AP6035665 (AN) SOURCE CODE: PO/0006/66/000/004/0315/0320

AUTHOR: Aldova, Eva; Zavadsky, Marian

ORG: Institute of Epidemiology and Microbiology, Prague (Zaklad Epidemiologii i Mikrobiologii)

TITLE: Shigella sensitivity to antibiotics

SOURCE: Medycyna doswiadczalna i mikrobiologia, no. 4, 1966, 315-320

TOPIC TAGS: antibiotic, sulfonamide, streptomycin, tetracycline, microbiology, epidemiology, Shigella, chloramphenicol, terramycin, antibiotic resistance, sulfonamide resistance

ABSTRACT: A comparison of 476 random-selected Shigella flexneri and sonnei strains, isolated in Czechoslovakia, Hungary, and Poland, showed that they possessed general resistance to the antibiotics chloramphenicol, streptomycin, terramycin, and tetracycline, and to sulfonamides. Of all strains tested and compared only four, while resistant to two antibiotics (one in Czechoslovakia to chloramphenicol and streptomycin, and three in Hungary and Poland to tetracycline and streptomycin), were sensitive to sulfonamides. All remaining strains were sulfonamide resistant.

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L 09857-67

ACC NR: AP6035005

5

Eva Sojkova took part in the laboratory work (in Czechoslovakia) and the authors thank Prof. Dr. K. Lachowicz, State Institute of Hygiene in Warsaw, and Dr. B. Sereny, State Institute of Hygiene in Budapest, for the Shigella strains made available to them for their studies, and Dr. E. Svandova, Institute of Epidemiology and Microbiology in Prague, for preparing statistical material. Orig. art. has: 3 tables. [W050]

SUB CODE: 06/ SUBM DATE: none/ ORIG REF: 002/ OTH REF: 005/

Card 2/2 blp

ANTROPOVA, M.V., red.; ZAVAD'YE, A.S., red.; GALKIN, P.D., red.; NOVOSELOVA, V.V., tekhn.red.

[Daily schedule for children and adolescents] Rezhim dnia detei i podrostkov. Pod red. M.V.Antropovoi. Moskva, 1959. 114 p. (MIRA 12:12)

1. Akademiya pedagogicheskikh nauk RSFSR, Moscow. Institut fizicheskogo vospitaniya i shkol'noy gigiyeny.
(Children--Care and hygiene)

L 30016-66 EWP(v)/EWP(k)/EWP(h)/EWP(l)
ACC NR: AP6020101 SOURCE CODE: CZ/0057/66/000/002/0084/0085

27
B

AUTHOR: Zarsky, Jiri (Engineer); Zavadsky, Jiri (Engineer)

ORG: VZKG, Ostrava

TITLE: Practical experience with sand blasting in the cold rolling mill of the Klement Gottwald Vitkovice Iron works

14

SOURCE: Hutnik, no. 2, 1966, 84-85

TOPIC TAGS: cold rolling, pickling, hydrochloric acid

ABSTRACT: The authors describe operation of a unit purchased from the French firm Sommenor and Simon-Lehman. The unit does not remove scale as much as is needed, and therefore the authors had to design a pickling unit as a second step of rust removing. The main difficulty with the plant is due to the fact that "V" belts for the drives in the plant cannot be obtained in a satisfactory quality from Czechoslovak production. Pickling was tried with 20% HCl at 18°C, but the finished product did not have a satisfactory appearance; now, 10% sulfuric acid is used at 60-70°C with satisfactory results. The authors found that operation of the sand blasting plant is 60% more expensive than the use of acid pickling. Orig. art. has: 2 tables. [JPRS]

SUB CODE: 13 / SUBM DATE: none

Card 1/1 90

ZAVADZKIY*KRASNOPOL'SKIY,S.P.; Fedotov, D.D., Docent

Psychiatry - History

From the past of Russian psychiatry, Zhur. nevr. i psikh.; 52 No. 6, 1952

Monthly List of Russian Accessions, Library of Congress, October, 1952 Unclassified

ZAVARINA, R.A.

Space-time distribution of an ionospheric disturbance in high latitudes of the Northern and Southern Hemispheres after large chromospheric flares. Geomag. i aer. 3 no.1:79-87 Ja-F '63. (MIRA 16:4)

1. Institut zemnogo magnetizma, ionosfery i rasprostraneniya radiovoln AN SSSR.

(Magnetic storms)

DMITRIYEVA, I.N.; ZAVALEN, B.Yu.

Dispensary service in skin diseases; from data of the medical and hygiene division of the Tashkent Textile Institute. Vest. derm. i ven. 33 no.1:41-45 Ja-F '59. (MIRA 12:3)

1. Iz Uzbekskogo nauchno-issledovatel'skogo kozhno-venerlogicheskogo instituta (dir. - dots. V.N. Matveyev) i mediko-sanitarnoy chasti Tashkentskogo tekstil'nogo kombinata (Nach. V.A. Loskutov)
(SKIN DISEASES, ther.
dispensary serv. (Rus))

DMITRIYEVA, I.N.; ZAVALEN, B.Yu.

Incidence of dermatosis among workers of the Tashkent Textile Combine on first-call data. Med. zhur. Uzb. no.9:27-28 S '61. (MIRA 15:2)

1. Iz Uzbekistanskogo nauchno-issledovatel'skogo kozhno-venerologicheskogo instituta (direktor - dotsent V.N.Matveyev) i medsanchasti Tashkentskogo tekstil'nogo kombinata (glavnyy vrach - A.K.Kamalov).
(TASHKENT--TEXTILE WORKERS--DISEASES AND HYGIENE)
(SKIN--DISEASES)

KONDRASHIN, N.A., inzh.; ZAVALEY, B.D.

Drive of a whipper with a centrifugal clutch. Masl.-zhir.prom. 26 no.9:41 S '60. (MIRA 13:8)

1. Blagoveshchenskiy maslozavod.
(Blagoveshchensk (Amur Province)--Oil industries--Equipment and supplies)

34976
S/080/62/035/002/017/022
D258/D302

11.2140
11.2210

AUTHORS: Yakubchik, A. I., Smirnova, V. K. and Zavalev, V. M.

TITLE: Determining structure regularity in lithium-pentadiene rubber by the character of the 1,4-addition

PERIODICAL: Zhurnal prikladnoy khimii, v. 35, no. 2, 1962, 405-408

TEXT: The authors investigated the oxidation-decomposition products of Li-pentadiene rubber ozonide to establish the type of linkages formed during polyaddition. Chloroform solutions of the rubber were ozonized. The ozonides were dissolved in glacial acetic acid, decomposed with CH_3COOOH and yielded, on standing, acids in both crystalline and viscous states. The products were isolated and identified by distributive chromatography as methylsuccinic, dimethylsuccinic, succinic and acetic acids. These first 3 acids accounted for 38.1% of the carbon skeleton of the rubber, while 1,2 additions with propenyl groups were shown earlier to account for another 6.8%. The total of 38.1% breaks down into 23.9% of methyl-

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succinic acid formed by the breakdown of 1,4 - 1,4 additions: 6.2% of dimethylsuccinic acid from 1,4 - 4,1 additions; and 8.1% of succinic acid from 4,1 - 1,4 additions. There are 2 figures, 3 tables and 13 references: 5 Soviet-bloc and 8 non-Soviet-bloc. The references to the English-language publications read as follows: F. W. Staveley, Ind. Eng. Ch., 48, 778, (1956); H. Marshall and A. T. Cameron, Chem. Soc., 91, 1522, (1907).

SUBMITTED: May 5, 1961

Card 2/2

IVANOV, V.S.; SMIRNOVA, V.K.; KLEPTSOVA, A.P.; BARABASH, V.I.; TSAREVSKIY, N.Ye.; YEMELIN, Yu.D.; SHIROKOV, N.A.; ZAVALEY, V.M.

Catalytic formation of crotonaldehyde. Part 3: Condensation of acetaldehyde over magnesium, zinc, strontium, cadmium, and barium phosphates. Vest LGU 16 no.22:139-148 '61. (MIRA 14:11)
(Acetaldehyde) (Crotonaldehyde) (Phosphates)

ZAVALEYEV N. Ye.

ZAVALEYEV, N.Ye., kandydat gistarychnykh navuk.

Workers of the White Russian S.S.R. during the period of reconstruction; 1921-1925. Vesti AN BSSR. Ser. hram. nav. no.2:29-46 '57. (MLRA 10:8)

(White Russia--Labor and laboring classes--History)

ZAVALNYEV, P., inzh.

Protection for electric motors in cases of overloading of roller mills. Muk.-elev.prom. 24 no.3:27-28 Mr '59. (MIRA 12:9)

1. Kolomenskiy mel'kombinat.
(Electric motors)
(Flour mills--Equipment and supplies)

KURKUDYM, F.Ye.; KARAYEV, R.G.; BELEN'KIY, M.S.; ZAVALI, L.A.; KOVALEVA, M.T.; SOVETOV, V.N.; SOKOLOV, A.V.; SHUKHTINA, I.A.

Professor V.V.Guk on his 70th birthday. Vop. kur., fizioter. i lech. fiz. kul't. 25 no.2:184-185 Mr-Ap '60. (MIRA 13:9)
(GUK, VADIM VASIL'EVICH, 1889-)

ZAVALI, L.A., kand. med. nauk

[Methodology of the treatment of sick children with sequelae of poliomyelitis in the mud health resorts of the Ukraine; a methodological letter] Metodika lecheniia bol'nykh detei s posledstviiami poliomielita na griaze-vykh kurortakh Ukrainy; metodicheskoe pis'mo. Odessa, 1962. 18 p. (MIRA 17:9)

1. Ukrainskiy nauchno-issledovatel'skiy institut kurortologii i fizioterapii.

ZAVALII, Pavlo Volodimirovich; IGOSHKIN, Georgiy Stepanovich [Ihoshkin, H.S.]; SHENDRIK, Lyudmila Karpo na [Shendryk, L.K.], red.; SHKOL'NIKOV, B., red.; SHUSTER, A., red.

[Get acquainted with the Ukraine] Poznaiomtes' z Ukrainoiu. Kyiv, Mystetstvo, 1964. 1 v. (MIRA 18:10)

ZAVALIN, I.V.; SHIMANSKIY, Yu.I. [Shymans'kyi, IU.I.] Prinimali uchastiye: AL'OKHIN, A.D., aspirant; VOLKOV, O.I., student

Density and concentration in the binary solution benzene--propyl alcohol near the liquid-vapor critical point. Ukr. fiz. zhur. 9 no.10:1122-1133 O '64 (MIRA 18:1)

1. Kiyevskiy gosudarstvennyy universitet im. Shevchenko.

ZAVALIN, I.V.

Study of the properties of benzene in the critical state without admixture of air. Ukr. fiz. zhur. 10 no.2:235-237 F '65. (MIRA 18:4)

1. Kiyevskiy gosudarstvennyy universitet im. Shevchenko.

SHIMANSKIY, Yu.I.; SHIMANSKAYA, Ye.T.; Prinimali uchastiye: YATSYUTA, N.A., student; ZAVALIN, I.V., aspirant

Study of the density of benzene near the cricital point. Ukr. fiz. zhur. 7 no.8:861-868 S '62. (MIRA 16:1)

1. Kiyevskiy universitet.
(Benzene--Density) (Critical point)

ZAVALISHCHIN, S.T.

Some extremum properties of trigonometrical polynomials. (MIRA 18:12)
Trudy Mat. inst. 78:3-11 '65.

L 44139-66 EWT(d)/EWP(1) IJP(c)

ACC NR: AP6023971 SOURCE CODE: UR/0376/66/002/004/0571/0573

30
29
B

AUTHOR: Zavalishchin, S. T.

ORG: Sverdlovsk Section, Mathematical Institute im. V. A. Steklov (Sverdlovskoye otdeleniye matematicheskogo instituta)

TITLE: An optimal problem with single-cycle switching

SOURCE: Differentsial'nyye uravneniye, v. 2, no. 4, 1966, 571-573

TOPIC TAGS: optimal automatic control, differential equation system

ABSTRACT: For the case of a system of differential equations

$$\dot{x} = Ax - ku, \qquad (1)$$

where A is a constant (n x N)-matrix; k an n-dimensional vector; u a scalar function; and $|u| \leq 1$, and the functional

$$J = \int_0^\infty f(x)\,dt, \qquad (2)$$

where $f(x) = \frac{1}{2}(x, Fx)$ is a positive definite quadratic form, the control u, minimizing the functional (2), may be specified in the following manner. It is assumed that $\mathrm{Re}\,\lambda_1 < 0$,

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then there exists a symmetric matrix V such that

$$VA + A'V = -F \tag{3}$$

and $v(x) = \frac{1}{2}(x, Vx)$ is another positive definite quadratic form. The author then introduces the function

$$\pi(x) = (\Pi, x), \tag{4}$$

with $\Pi = Vk$ and evaluates the total derivative of the function v(x) which because of Eq. (1) and Eqs. (3) and (4) becomes

$$\dot{v} = -f - \pi u. \tag{5}$$

Integrating Eq. (5) from 0 to ∞ and using Eq. (2), the author obtains $J = v(x_0) - P$, where

$$P = \int_0^\infty \pi u dt. \tag{6}$$

The establishment of the control specified above is then equivalent to finding a u which makes Eq. (6) a maximum. Chang Jen-Wei erroneously concluded in an earlier paper (Avtomatika i telemekhanika, 22, No. 12, 1601-1607, 1961) that the control

$$u = \operatorname{sign} \pi \tag{7}$$

satisfies the optimum problem. Since R. Bellman((Dynamic Programing) Dinamicheskoye

ACC NR: AP6023971

programmirovaniye. IL, 1960) designed controls corresponding to Eq. (7), the author presents the necessary and sufficient conditions which make the solution of Eq. (7) correct. Orig. art. has: 27 formulas.

SUB CODE: 12/ SUBM DATE: 18May65/ ORIG REF: 002/ OTH REF: 001

LS
Card 3/3

ZAVALISHIN, A.; HAMEYEV, S.; VOINOV, Yu.; FEDOROV, S.; KLYKOV, M.; TIMUSHEV, A. ANISIMOV, V.; KOL'CHUGIN, M.P., redaktor; PULIN, L.I., tekhnicheskiy redaktor.

[Chairman of collective farms speak about their experiences] Predsedateli kolkhozov o svoem opyte [Tula] Tul'skoe knizhnoe izd-vo, 1956. 79 p. [Microfilm] (MIRA 10:5)

(Collective farms)

ZAVALISHIN, A.A.; DOLOTOV, V.A.

In memory of Konstantin Dmitrievich Glinka. Pochvovedenie no.9:117-120 S '62. (MIRA 16:1)
(Glinka, Konstantin Dmitrievich, 1867-1927)

ZAVALISHIN, B.R.

Data obtained by the controlled directional sensitivity method on short waves isolated in regional seismic prospecting in the central part of the Caspian Lowland. Trudy MINKHiGP no.[illegible] (MIRA 18:2) 123-131 '64

ZAVALISHIN, D.A.; NOVIKOVA, G.I., inzh.; CHZHEN BIN-GAN [Cheng Ping-kang], kand.tekhn.nauk

Transistorized frequency converters for regulating the angular velocity of asynchronous motors. Elektrichestvo no.11:37-44 N '62. (MIRA 15:11)

1. Institut elektromekhaniki AN SSSR. 2. Chlen-korrespondent AN SSSR (for Zavalishin).
(Electric motors, Induction) (Frequency changers)

ZAVALISHIN, Dr. D. A.; BERGER, Prof. A. Ya. CHERNYAVSKIY, DOCENT F. I.; CHERNYAVSKIY, DOCENT F. I.; YAKUBOVSKIY, V. Ya.

Electric Machinery - Testing

L. M. Pyotrovskiy and Ye. A. Pal's book "Testing electrical machines." Prof. A. Ya. Berger, Docent F. I. Chernyavskiy, Eng. V. Ya. Yakubovskiy, Dr. D. A. Zavalishin, and others. Elektrichestvo No. 5, 1952.

Monthly List of Russian Accessions, Library of Congress, November 1952. UNCLASSIFIED.

ZAVALISHIN, D. A.,

4759. BRITSYN, M. L. Proyektirovaniye samoletnyk elektr_icheskikh mashin. pod red D. A. ZAVALISHINA. 1., 1954. 28 sm. (m-vo vyssh. obrazovaniya sssr. leningr. in-t aviats. priborostroyeniya. kafedra elektr. mashin). b. ts. ---- steklogr. ild. ch. 1. raschet samoletnykh generatorov postoyannogo toka IV, 150s; 361. chert. 300 ekz.

SO: Letopis' Knizhnaya #4, 1955.

ZAVALISHIN, D. A. Doctor of Technical Sciences, and KOSTENKO, M. P., Academician.

"State of and Tasks in the Development of Electric Drives With Frequency, Amplidyne, and Electron-Ion Control." a paper given at the Conference on Scietific Problems of Production Automation, Moscow State U. 15-20, Oct 56.

ZAVALISHIN, D.A.

BULOVSKIY, P.I.; MES'KIN, V.S., otvetstvennyy redaktor; AKSENOV, D.D., red.; BLINOV, V.I., red.; VORONOVSKAYA, Ye.V., red.; GOLOVCHANSKIY, P.M., red.; ZAVALISHIN, D.A., red.; KPSHTEYN, M.O., red.; BORKHVARDT, G.K., red.; PAVLOV, V.A., red.; POVALYAYEV, A.V., red.; SIVERS, A.P., red.; FILIPPOV, P.I., red.; MISHIN, V.I., red.; EL'KIN, Ye.G., tekhn.red.

[Theoretical bases for the technology of assembling aeronautical instruments] Teoreticheskie osnovy tekhnologii sborki aviatsionnykh priborov. Leningrad, 1956. 122 p. (Leningrad. Institut aviatsionnogo priborostroeniia. Trudy no.15) (MIRA 10:11)
(Aeronautical instruments)

TOLVINSKIY, Vatslav Aleksandrovich; ZAVALISHIN, D.A., professor, doktor tekhnicheskikh nauk, nauchnyy redaktor; USSER, A.S., redaktor; ZABRODINA, A.A., tekhnicheskiy redaktor

[Direct current electric machinery] Elektricheskie mashiny postoiannogo toka. Moskva, Gos. energ. izd-vo, 1956. 468 p. (MLRA 9:9)
(Electric machinery--Direct current)

ZAVALISHIN, D.A.; GLEBOV, I.A.

Quick-acting control of the voltage booster in the excitation system of high-power hydrogenerators. Elektrosila no.14:64-71 '56. (MIRA 12:12)

(Electric generators)

ZAVALISHIN, D.A.

110-12-17/19

AUTHOR: Kostenko, M.P., Academician, Zavalishin, D.A., Professor, and Glebov, I.A., Dotsent.

TITLE: On the Control of Reactive Power by Means of Controlled Valves (O regulirovanii reaktivnoy moshchnosti pri pomoshchi upravlyayemykh ventiley)

PERIODICAL: Vestnik Elektropromyshlennosti, 1957, Vol.28, No.12, pp. 65 - 71 (USSR).

ABSTRACT: This article constitutes discussion of the article by Venikov, Tsov'yanov and Khudyakov entitled "New Sources of Reactive Power that Can be Used to Improve the Utilisation of Generators and Synchronous Compensators", published in this number of the journal. The present article gives the results of theoretical and experimental investigations of the main properties of rectifier and rectifier-inverter installations with series-connected capacitors as sources of reactive power. Experimental investigations were made on the ionic converters of the electro-dynamic model of the Institute of Electro-Mechanics of the Ac.Sc. USSR. A rectifier with condensers in series, with the d.c. circuit made through a reactor is similar in properties to a circuit consisting of a capacitor in series with a variable inductance. A limiting condition of operation

Card1/6is given in Fig.1, which presents currents and voltages in a

On the Control of Reactive Power by Means of Controlled Valves.

rectifier with a series-connected capacitor. The experimental equipment is described and the calculated voltage and current curves given. They are shown to be in good agreement with the experimental curves.

Certain fundamental difficulties in controlling a circuit of this kind are described. The authors of the article under discussion have arrived at wrong conclusions about the amount of power required for control, and the reasons for this are explained with reference to the oscillograms in Figs. 4 and 5 of the present article.

A rectifier with series capacitors has a minimum reactive power, so that for smooth control to zero capacitative current compensating reactors must be provided. Very high reverse voltages will occur on the valves under certain conditions. The power that it is necessary to instal is considered closely and shown to be much greater than the previous authors supposed. It could be reduced by providing other methods of compensation for normal conditions and using the rectifier installation only for transient and fault conditions. Unfortunately, the disadvantages of the circuit then appear most clearly. The merits of using a

 rectifier with a capacitor in series therefore requires further

On the Control of Reactive Power by Means of Controlled Valves.

study, particularly with ignition angles close to 90°. In the inductive condition the current can be regulated smoothly from zero, but smooth transition from the one condition to the other is not possible. However, the proposed circuit appears to have certain advantages, and in particular, low inertia.
It is stated that rectifier-inverter installations with series capacitors can only work with a capacitative load if the transformers have a fixed ratio. The limitations that this introduces are explained. The rectifier-inverter circuit has the same general properties as the rectifier circuit: there is a minimum capacitative current; when the reactive power output is increased the utilisation of the static condensers is decreased and smooth transition from capacitative to inductive current is not possible. The circuits differ in that the rectifier-inverter circuit can reduce the limiting value of the capacitative current by circulating active power. However, this circulation of active power impairs the utilisation of the static capacitors, as is shown in Fig.8. Thus, the rectifier-inverter circuit offers no advantages and is not recommended. It is considered that the subject requires further study.
The article is followed by brief contributions to discussion on
Card3/6 the same paper, as follows:

On the Control of Reactive Power by Means of Controlled Valves.

Dozent N.A. Mel'nikov of the All-Union Correspondence Power Institute (Vsesoyuznyy Zaochnyy Energeticheskiy Institut) considers the article interesting and important but thinks that no new sources of reactive power have been proposed, since only synchronous compensators or static capacitors have been considered. The article devotes insufficient attention to considerations of harmonics. The proposal to use induction generators in power stations will not find favour, if only on grounds of cost. Particular attention should be paid to the possible use of automatic control of static condensers and reactors with controlled valves.
Candidate of Technical Sciences Ye. Ya. Kazovskiy of the Elektrosila Works (Zavod "Elektrosila") considers that the equipment will be larger and more expensive than the authors think.
Doctor of Technical Sciences, Professor Kh.F. Fazylov of the Energetics Institute Ac.Sc. Uzbek SSR (Institut Energetiki AN Uz SSR) thinks the article important, especially concerning automatic control of static capacitors. However, he raises various objections to the circuits proposed and feels in particular that they will give rise to harmonics. He considers that it would be premature to recommend apparatus of this kind as

On the Control of Reactive Power by Means of Controlled Valves.

major means of generating reactive power.
Doctor of Technical Sciences, Professor D.A. Gorodskiy of the Scientific Research Institute of the Electro-technical Industry (NII EP) believes that the cost of the equipment will prevent its use and that maintenance will be complicated.
Doctor of Technical Sciences, Professor V.G. Kholmskiy and Candidate of Technical Sciences I.M. Chizhenko of the Kiev Polytechnical Institute (Kiyevskiy Politekhnicheskiy Institut) consider that the authors have raised some very pressing questions which need solution. Similar problems will arise in d.c. transmission. The schematic diagram proposed by the authors is ingenious and promising, but muchwork will have to be done to analyse and develop the new circuits. It will be important to make capacitors cheaper and more reliable.
Candidate of Technical Sciences, L.G. Mamikonyants of the TsNIEL MES considers that the paper raises problems that are urgent in connection with the construction of long-distance transmission lines, but that it has a number of defects and leaves many important questions untouched. It does not indicate the problems most in need of further development. The work should be supported by laboratory test data. Although valves

On the Control of Reactive Power by Means of Controlled Valves.

are of lower inertia than rotating machines, they do not have the same advantageous reservoir of energy stored in rotating masses.

Candidate of Technical Sciences L.V. Tsukernik of the Ac.Sc. Ukrainian SSR (AN USSR) considers that valve switching of high-power electrical circuits using grid control has many other applications. For example, it should be possible to control effectively the braking load of generators in large remote power stations. The schematic circuit given by the authors will undoubtedly work, but further technical and economic comparison with other methods of achieving the same object is required. Some of the circuits are not sufficiently explained.

There are 8 figures.

ASSOCIATION: Institute of Electro-Mechanics of the Ac.Sc. USSR (Institut Elektromekhaniki AN SSSR)

AVAILABLE: Library of Congress.

ZAVALISHIN, D.A.

8(2); 28(1) PHASE I BOOK EXPLOITATION SOV/1433

Soveshchaniye po avtomatizirovannomu elektroprivodu peremennogo
toka, Moscow, 1955

Trudy... (Transactions of the Conference on Automated A-C
Electric Drives) Moscow, Izd-vo AN SSSR, 1958. 398 p.
4,000 copies printed.

Sponsoring Agency: Akademiya nauk SSSR. Institut avtomatiki i
telemekhaniki.

Resp. Eds: V.S. Kulebakin, Academician, and M.G. Chilikin,
Doctor of Technical Sciences, Professor; Ed. of Publishing
House: D.M. Ioffe; Tech. Ed.: I.F. Kuz'min.

COVERAGE: The conference was organized on the initiative of
the Institute of Automation and Telemechanics of the Academy
of Sciences, USSR, and the Moscow Power Engineering Insti-
tute and had as its aim the planning of the most progressive
ways of developing automatic control of electric drives. The
first conference on the subject of automated electric drive
took place more than ten years before the present one and
was concerned with d-c electric drives. The results of this
conference were found to be most valuable in the task of re-
building postwar Soviet industry and in furthering industrial
development. Present technical development of Soviet industry
demands high speeds, simplicity of construction, reliability
of operation, and economy. The squirrel-cage induction motor
with frequency control appears to be the most promising type
of controlled a-c drive. For wide application of this drive
in the Soviet economy there is a need of developing new types
of frequency converters. Some interesting studies were made
in this connection at the Institute of Automation and Tele-
mechanics of the USSR Academy of Sciences and its Leningrad
branch, at the Moscow Power Engineering Institute, the Central
Design Bureau of the "Elektroprivod Plant, the State Design
Institute of the Ministry of Construction of the RSFSR, and
in other design organizations. These studies were discussed
at the present conference. The transactions contain material
concerning the theory and design of reactor, pulse, and
frequency methods of controlling a-c electric drives.
Candidate of Technical Sciences I.V. Utkin and Engineer V.A.
Yakovleva participated in the preparation of this collection
of papers. The volume was reviewed by Professor Ya. V. Mitusov,
Doctor of Technical Sciences. Some of the papers include a
bibliography.

TABLE OF CONTENTS:

The problem of creating a static frequency changer.
which makes it possible to change the frequencies
of alternating current within wide limits, was
solved by the author in 1936. In that year he re-
ceived an author's certificate, No. 4966, for an elec-
tronic frequency changer. A description of the ex-
perimental installation is given. In 1939 the author
developed an improved model of the changer, and between
1939 and 1941 he supervised the work of a team of de-
signers at the Leningrad Politechnical Institute on
an electronic frequency changer for the Leningradskiy
zavod tekstil'nogo mashinostroyeniya imeni Karla Marksa
(Leningrad Textile Machinery Manufacturing Plant imeni
Karl Marx) to be used to change frequencies within the
limits of 187.5 and 250 cps. After the war G.I. Shevchenko
and V.A. Labuntsov presented research on stepped-up fre-
quency changing. In the field of low-frequencies, the
design presented by F. Butayev in 1936 is described. The author
states that research and design in the field of elec-
tronic frequency changers is being carried on at the
Leningrad Polytechnical Institute and at the Leningrad
Institute of Aviation Instrument Making and, more
recently, also at the Moscow Power Engineering In-
stitute. One experimental unit has already been com-
pleted. No references are given.

ZAVALISHIN, D.A.; NOVIKOVA, G.I.

An inverter using transistors for frequency control of the speed of asynchronous electric motors. Sbor.rab.po vop.elektromekh. no.7:78-85 '62. (MIRA 16:1)
(Electric motors, Induction) (Automatic control)

ZAVALISHIN D.A.

KOSTENKO, M.P., akademik; ZAVALISHIN, D.A., prof.; SHCHEDRIN, N.N., doktor tekhn. nauk; SALITA, P.Z., inzh.; VAZHNOV, A.I., kand. tekhn. nauk, dots.; ROZOVSKIY, Yu.A., kand. tekhn. nauk; MARCHENKO, Ye.A., kand. tekhn. nauk.; POLYAK, G.I., inzh; VENIKOV, V.A., doktor tekhn. nauk, prof.

Dynamic models of power systems. Elektrichestvo no.2:78-85 F '58. (MIRA 11:2)

1. Nauchno-issledovatel'skiy institut postoyannogo toka (for Schedrin, Salita, Vazhnov, Rozovskiy, Marchenko, Polyak). 2. Chlen-korrespondent AN Uzbekskoy SSR (for Shchedrin). 3. Moskovskiy energeticheskiy institut (for Venikov).

(Electric networks)

AUTHORS: Kostenko, M.P., Alekseyev, A. Ye., SOV/105-58-7-30/32
Lyuter, R.A., Zavalishin, D. A.
Gnedin, L. P., Britain, M. L.

TITLE: Leonid Nikolayevich Gruzov (Deceased)

PERIODICAL: Elektrichestvo, 1958, Nr 7, pp. 93-95 (USSR)

ABSTRACT: Professor Leonid Nikolayevich Gruzov, Doctor of Technical Sciences, Engineer-Colonel, Head of the Kafedra elektropitaniya ustanovok svyazi Voyennoy krasnoznamennoy akademii svyazi (Department of Electric Supply of Telecommunication Equipment at the Krasnoznamennaya Military Academy of Telecommunication) a prominent expert in the field of electric machines, died on October 17th, 1957, at the age of 51. He graduated with distinction from the Donskoy politekhnicheskiy institut (Don Polytechnical Institute) in 1927, was then aspirant at the Leningradskiy politekhnicheskiy institut (Leningrad Polytechnical Institute), assistant, and finally docent at the same institute. He combined his scientific and pedagogical activity with that of an engineer. He published a series of papers on the transient modes of operations of electric machines and of power supply systems.

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Leonid Nikolayevich Gruzov

SOV/105-58-7-30/32

He worked as engineer in the "Elektrosila" works as well. He took part in World War II. In 1947 he took his degree as Doctor of Technical Sciences. He developed a method for the investigation of electric machines. He was first head of the Department of Theoretical Electrical Engineering, then of the Department of Electric Supply Plants at the Military Academy of Telecommunication. He published more than 30 scientific papers, textbooks and manuals. There is 1 photograph.

1. Scientific personnel--USSR

Card 2/2

SOV/24-58-8-13/37

AUTHOR: Zavalishin, D. A. (Leningrad)

TITLE: New Systems for Transforming the Frequency of Alternating Current by Means of Electron-Ion Transducers and Generators with Ionic Commutators (Novyye sistemy preobrazovaniya chastoty peremennogo toka pri pomoshchi elektronno-ionnykh preobrazovateley i generatorov s ionnym kollektorom)

PERIODICAL: Izvestiya Akademii Nauk SSSR, Otdeleniye Tekhnicheskikh Nauk, 1958, Nr 8, pp 81-87 (USSR)

ABSTRACT: In spite of the fact that work on ion-machine systems intended for continuous transformation or stabilisation of a.c. frequency has been in progress for many years, so far only results of theoretical work and of small-scale laboratory circuits are available but not of industrial-scale installations. This is due to the complexity of the arrived-at solutions, the large size of the equipment and also the insufficient reliability of the electron-ion circuits under regimes which occur during frequency transformation. However, solutions of the problem of frequency transformation have been outlined which may lead to serviceable installations. An electron-ion frequency transformation circuit, permitting continuous variation of the a.c. frequency,

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was designed by the author of this paper as long ago as 1934-1937 at the Leningrad Polytechnical Institute for the purpose of controlling the speed of an asynchronous motor with a short-circuited rotor. The apparatus contained 18 thyratrons for a motor rating of merely 150 W. It proved possible to transform by means of this equipment the primary frequency of 50 c.p.s. into a secondary frequency varying between 5 and 60 c.p.s., whilst simultaneously varying the voltage applied to the asynchronous motor in accordance with a law derived by M. P. Kostenko (Ref 2). The circuit included condenser switching and for ensuring stable operation it was necessary to increase the capacitance of the condensers for lowering the secondary frequency. The capacitances for frequencies below 15 to 20 c.p.s. were so large that it proved impracticable to use such switching in industrial installations. In his dissertation "Fundamental Properties of an Independent Invertor with Capacitance Switching and

Card 2/11 Additional Valves" B. U. Umarov (SPI, 1955) described a

New Systems for Transforming the Frequency of Alternating Current by Means of Electron-Ion Transducers and Generators with Ionic Commutators

circuit which requires so many additional ionic valves that the number of tubes in the invertor part is doubled; his circuit contains 2 or even 4 (in the case of a bridged circuit) series-connected tubes. The presence of a large number of such series-connected tubes reduces the efficiency of the circuit. In spite of that, this circuit is worth paying attention to, particularly the variant proposed by V. F. Shukalov. A second solution was arrived at by IEM, Ac.Sc. USSR where a system was developed containing combined switching of the current. This system is particularly suitable if it is necessary to transform an elevated primary frequency of 200 to 400 c.p.s. into a secondary frequency which can be varied between 5 and 70 c.p.s. The experimental ionic transducer built on this principle was produced by IEM for exciting a compensated generator of the system proposed by Academician M. P. Kostenko. This equipment was used as a powerful electro-machine amplifier in a circuit for frequency speed regulation of asynchronous motors. The

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basic source of energy was a single-phase generator supplying current at 400 c.p.s. The circuit diagram of the main circuit of this ionic frequency transforming circuit is given in Fig.1. It contains 12 electron-ion valves connected into six separate groups, each of which is connected to a smoothing reactor, all the three windings of which are on a single core. The centres of these windings are connected to the secondary frequency busbars and to the switching condensers. The secondary busbars feed the consuming devices, in the given case the excitation winding of a commutator generator. By influencing the grid voltage any of the tubes can be made to close or open the circuit. Control of the grid voltage should ensure such a sequence of passage of the current through the tubes that the law of variation of the transformed secondary currents and voltages should correspond to that of three-phase a.c. at any secondary frequency. The sequence of passage of the current through the tubes, the reactor and the current consuming

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windings are shown in Fig.2. The curves of the currents in the individual phases during switching are plotted in Fig.3, assuming thereby an instantaneous change in the current values. As was mentioned earlier, switching of the tube currents by the condenser e.m.f. can be effected only for frequencies not lower than 15 to 20 c.p.s. However, at frequencies lower than 15 to 20 c.p.s. it is possible to utilise the primary voltage. This switching is based on the principle that at low secondary frequencies the period is many times that of the primary voltage and, therefore, it is always possible to fit a whole number of half-cycles of the primary voltage into one half-cycle of the secondary voltage and to extinguish the thyratrons by removing the positive impulses from the grids and feeding such impulses onto the grids of the thyratrons which should strike. Thereby, the extinction will proceed at the instant of passage of the current through zero. This method enables to dispense with switching condensers at frequencies below 15 to 20 c.p.s.

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However, this cannot be achieved if there is an intermediate direct current system, since there only condenser switching of the invertors is possible. The voltage curves of the primary circuit and the resulting curve of the secondary voltage are graphed in Fig.5. The average primary voltage will vary from half-cycle to half-cycle and the secondary voltage will increase during the first half of the half-cycle and decrease during the second half. By applying an appropriate law of changing the cutting off of the voltage, the secondary voltage can be made to approach the sinusoidal shape. A sliding cut-off voltage also permits passage of reactive current through the circuit. For this purpose it is enough to reduce the voltage during the first quarter of the cycle and operate during the second quarter of the cycle with a negative voltage, letting the current flow in the same direction as a result of the e.m.f. of the induction of the external circuit. The voltage curves within the half-cycle will in the case of a purely reactive current

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have a shape as shown in Fig.6; instead of a lagging current a leading current will be obtained. For producing such a sliding cut - off I.E.M., Ac.Sc., USSR developed an electronic control circuit as shown in Fig.7. The circuit comprises two thyratrons which supply one half wave of the transformed voltage into one phase of the secondary circuit. In Fig.8 an oscillogram is reproduced, obtained for an experimental set-up feeding an active load without a commutator. The secondary voltage of the frequency transformer can be changed by changing the primary voltage; thereby, the voltage of increased frequency which feeds the grid circuits must remain unchanged and, therefore, the grid circuit has to be fed from a separate small generator which is rigidly coupled with the main generator. A second possibility of regulating the voltage consists in displacing the phase of the voltage feeding the grids relative to the anode voltage and thereby varying the average value of the primary voltage during a half-cycle. This method is

inappropriate. The theoretical assumptions were confirmed in the experimental investigation of the frequency transformation circuit designed by IEM. In Fig.9 an oscillogram is reproduced for the case of feeding the reactor of the phase displacement bridge with a frequency of 10 c.p.s. The oscillogram was obtained in absence of a switching capacitance and in absence of a resistance. In Fig.10 an oscillogram is reproduced taken at the same frequency. However, in this case the excitation winding of a commutator generator was a current consuming device. Fig.11 contains the same curves for a frequency of 30 c.p.s. and presence of a switching capacitance; in this case the voltage and the current curves were of sinusoidal shape. In the last part of the paper generators with electron-ion commutation are described. The advantage of such commutation is the possibility of obtaining very rapid changes in the magnitude of the rectified voltage by acting on the control grids of the tubes. Due to this feature, such

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circuits can be useful in systems of excitation of powerful synchronous machines which feed the current into long transmission lines and where it is necessary to act very rapidly on the excitation circuits for the purpose of maintaining the system stability. An electron-ion commutator can be applied not only for obtaining direct current but also for obtaining a.c. of any frequency irrespective of the speed of rotation of the rotary generator, particularly for obtaining a fixed frequency in the case of a variable speed of the rotor. The design of such machines is based on the circuit of the compensated commutator generator with a metallic commutator as proposed by M. P. Kostenko (Ref 3). Such a generator can supply an alternating current of a constant frequency at a variable speed or a current of variable frequency at a constant speed of rotation of the rotor. The same properties can also be reached by substituting the mechanical, metallic commutator by electronic commutation, the advantage of which is that a

New Systems for Transforming the Frequency of Alternating Current by Means of Electron-Ion Transducers and Generators with Ionic Commutators

higher voltage can be obtained and there is no possibility of sparking. Such a machine is very much simpler than a machine with a metallic commutator, since from the design point of view it can be considered as an asynchronous machine with a wound rotor. The main variant of such a generator with an electronic commutator is shown in Fig.12; the generator is rotated by means of a prime mover (asynchronous motor) and is fitted with three windings: the excitation winding fed from an independent excitation source which fixes the frequency of the output voltage and supplies the magnetising current, a compensation winding connected in series with the rotor winding via the electron-ion commutator which consists of two groups of tubes connected in a bridge circuit. The two bridge circuits are series-connected and permit, by means of an intermediate direct current circuit, to link the rotor winding in which the emf of the slip frequency is generated with the compensation winding which has the emf of the frequency of the excitation network; the tubes of the bridge circuits are grid-

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controlled. The features of such a circuit are discussed. Experimental investigation of the steady-state regimes of such a circuit have confirmed the theoretical assumptions on the possibility of building a compensated generator with an electronic commutator which will permit widening the range of frequencies and voltages as compared to machines fitted with mechanical commutators. Such a "semi-conductor commutator" will provide new possibilities for building d.c. and a.c. generators. This paper was presented at the Scientific Session of the Technical Sciences Section, Ac.Sc., USSR, devoted to the 40th anniversary of the October Revolution. There are 13 figures and 3 Soviet references.

SUBMITTED: September 13, 1957

1. Alternating currents--Control systems 2. Frequency--Control 3. Frequency convertors--Equipment 4. Frequency convertors--Performance 5. Electric circuits--Design

AUTHORS: 1)Vazhnov, A. I., Docent, Candidate of Technical Sciences, Tolvinskaya, Ye. V., Engineer (a woman), SOV/105-58-10-10/28
2)Gordon, I. A., Engineer,
3)Zavalishin, D. A., Professor, Doctor of Technical Sciences, Glebov, I. A., Docent, Candidate of Technical Sciences

TITLE: Synchronous Condensers for Long-Distance Transmission Systems (Sinkhronnyye kompensatory dlya dal'nikh elektroperedach)

PERIODICAL: Elektrichestvo, 1958, Nr 10, pp 43 - 47 (USSR)

ABSTRACT: This is a study of problems of design of synchronous condensers connected with the elimination of self-excitation of such generators in various modes of operation. Inasmuch the investigation of two boundary cases of damper system design is of interest, that is to say, of a normal design and of a connected type of winding, this paper is limited to compensators with salient poles with only one type of rotor. The computations presented in this paper demonstrate that non-compensated supporting condensers, which are intended for continuous duty at rated power with lagging current can be built on

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the basis of conventional machines with very high power (75 MVA). In order to be able to obtain a considerable output with leading current, the compensator must operate with negative excitation currents. 2) A supporting synchronous condenser which is compensated for capacity can be designed on the basis of normal condensers. 3) Compensated supporting condensers can be continuously operated ar rated power with lagging and with leading current. 4) In order to guarantee a forced excitation of non-compensated supporting synchronous condensers an increased ceiling voltage of excitation is required. In compensated condensers a similar behaviour is guaranteed by normal exciters. There are 4 figures, 2 tables, and 5 references, 4 of which are Soviet.

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TITLE: Conversion of Direct Current into Alternating Current by Means of a Contact-Type Converter (Preobrazovaniye postoyannogo toka v peremennyy pri pomoshchi kontaktnogo preobrazovatelya)

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ABSTRACT: An attempt is made to give a qualitative analysis and some results of an experimental investigation of a mains-controlled converter which operates as an inverter. The transition from the rectification regime to the inversion in a contact-type converter can be done in two ways: (1) by changing the direction of the direct current in the circuit while the polarity of the voltage of the generator and the load is unchanged during the operating part of the period; (2) by changing the polarity of the voltage during the operating part of the period, while the direct of the current is unchanged. The first method appears to be impracticable due to the arcing of the contacts. A three-phase bridge-type converter can be constructed in the manner illustrated in Fig 1, where: (1) T is a 3-phase transformer; (2) D_a ,

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D_b and D_c are saturated chokes of the phases A , B and C; (3) OF are magnetizing windings of the chokes; (4) k_{al} , k_{bl} and k_{cl} are "cathode" contacts; (5) CD is a smoothing choke, and (6) R_b is a ballast resistance. The operation of the converter is explained by the waveforms of Fig 2. The waveforms of Fig 2a illustrate the rectification regime of the device, while Fig 2b shows the inversion operation by employing the first method. Fig 2v explains how the inversion is achieved by the second method. The transition from the rectification to the inversion by means of the second method can be explained as follows. The magnitude of the rectified voltage can be controlled by varying the regulation angle α (see Fig 1) from 0 to 90^o; the rectified voltage is thus varied from its maximum value E_{go} to 0 . If α is further increased, or if β is changed from 90^o to 0 (where $\beta = 180^o - \alpha$), the rectified current changes its polarity. Now, if a d.c. source is connected of the "rectifier", the converter will take power from the source instead

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of supplying it. The converter thus becomes a mains-controlled inverter which supplies power from the d.c. source to the a.c. mains. A successful inversion can be achieved by fulfilling the following requirements: (1) the regulation angle α of the converter should be variable from 0 to 180°; (2) the phases of the magnetizing currents in the chokes of the bridge circuit (see Fig 1) should be adjustable with respect to the voltages of the transformer; (3) the voltage of the d.c. source should be adjustable in magnitude and polarity. The operation of the mains-controlled controlled contact (commutator) inverter is essentially similar to that of a contact rectifier, except that the angle β has a certain minimum value which must be strictly observed. The authors carried out an experimental investigation of an inverter of the type shown in Fig 1. The system operated up to 60 kW and had the primary alternating voltage of 500 V. The d.c. source had a potential of 300 V. The experimental investigation fully corroborated the theoretical prediction. The experimental results are illustrated in Figs 5 and 6. The solid curves of Fig 5 illustrate the dependence of the inverted voltage $U_{g\beta}$ on the load current

Card 3/4 $I_{g\beta}$; the dashed curves show the inverted power, while the

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dash-dot curves give the useful load power. Fig 6 illustrates the dependence of the power factor cos φ and efficiency η on the load current $I_{g\beta}$. It is seen that η is almost constant when the load changes from 100 to 25%. There are 6 figures.

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